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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/900,068	07/06/2001	Gerald E. Markley	GJH-0102	8590

7590 03/17/2005  
Gerard J. Hughes  
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EXAMINER	
GRIFFIN, WALTER DEAN	
ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 03/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/900,068

**Applicant(s)**

MARKLEY ET AL.

**Examiner**

Walter D. Griffin

**Art Unit**

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-19 and 21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-19 and 21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

Art Unit: 1764

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-9, 11-19, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hallman (DE 1470680) in view of Trachte et al. (US 5,198,099) and Scott (US 3,425,810).

The Hallman reference discloses a process for removing sulfur from a distillate boiling range feed by contacting the feed in a first reaction stage with a catalyst that contains cobalt and

Art Unit: 1764

molybdenum and then passing the product from the first stage to a second stage where it contacts a catalyst that comprises nickel and molybdenum. The amount of molybdenum present in the catalyst ranges from 4 to 30 wt% and the amount of Group VIII metals in the catalyst ranges from 1 to 6 wt%. Inlet temperatures used in the two stages range from 204° to 399°C. Pressures used in the reaction zones range from 500 to 3000 psi. See the English language translation.

The Hallman reference does not disclose reacting the product from the second zone in an additional reaction stage, does not disclose the sulfur and nitrogen amounts present in the effluent from the first reaction zone, does not disclose that the hydrogen is counterflowing in relation to the feed, does not explicitly disclose the use of a nickel, molybdenum and tungsten catalyst in the second reaction zone and does not disclose the use of a reaction stage that contains a vapor passageway.

The Trachte reference discloses the hydrocracking of a petroleum distillate that has been previously hydrotreated in a two-stage hydrotreatment process. See column 1, lines 45-66.

The Scott reference discloses a hydrotreating apparatus that contains a vapor passageway through or around at least a portion of a catalyst bed. The reference also teaches hydrotreating in which the hydrogen flows countercurrently to the feed. See Figure 1; column 4, line 47 through column 5, line 12; and column 5, line 74 through column 6, line 34

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Hallman by including a hydrocracking step following the second hydrotreating zone as suggested by Trachte because the resulting product will be substantially free of heteroatoms and have other desired properties and because the

Art Unit: 1764

hydrocracking zone will have long term activity maintenance since the feed to the hydrocracking zone will be sweet.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Hallman by reducing sulfur and nitrogen amounts in the effluent from the first reaction zone to the levels claimed because the desired result of the Hallman process is the reduction of the amounts of these contaminants. Therefore, one would reduce the amounts of these contaminants to levels as low as possible including amounts within the ranges claimed.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Hallman by utilizing an apparatus that contains a vapor passageway through or around at least a portion of the catalyst bed as suggested by Scott because disruption and attrition of the catalyst is reduced and because liquid entrainment in the vapor would be eliminated. Additionally, it also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Hallman by having counterflowing hydrogen as suggested by Scott because smaller vessels can be used and rapid catalyst fouling will be eliminated.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Hallman by including tungsten in the catalyst in the second reaction zone because this metal is disclosed by Hallman as being suitable for use in the catalyst. Since tungsten and molybdenum are disclosed as being individually suitable, the combination of these two metals would also be expected to be suitable in the catalyst.

*Response to Arguments*

The argument that none of the applied references discloses that there should be a staged process wherein the first stage is operated to reduce the sulfur content of the feed to below about 1500 wppm is not persuasive. The Hallman reference discloses a staged process wherein the first stage is operated to reduce the sulfur content of the feed whereas the second stage is operated so that saturation of aromatic hydrocarbons takes place. Additionally, the example of Hallman discloses a final product having a sulfur concentration of 0.05 wt% (500ppm). Since the majority of the sulfur removal in the Hallman process occurs in the first stage, the Hallman reference suggests the desirability of reducing sulfur concentration to an amount similar to that which is claimed.

The argument that the claimed process that utilizes a CoMo catalyst in the first stage provides unexpected benefits is not persuasive. There appears to be no comparison made between the claimed invention and the closest prior art to Hallman. Therefore, the existence of unexpected results cannot be verified.

The argument that one would not be motivated to combine the Hallman and Trachte reference is not persuasive. If one desired to produce a specific distillate or naphtha as disclosed by Trachte, then one would be motivated to include a hydrocracking step after the hydrotreating stages of Hallman.

*Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

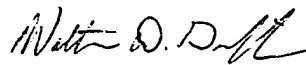
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter D. Griffin whose telephone number is (571) 272-1447. The examiner can normally be reached on Monday-Friday 6:30 to 4:00 with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1764

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Walter D. Griffin  
Primary Examiner  
Art Unit 1764

WG

March 7, 2005